

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE THE APPLICATION OF

Kermarec, et al.

SERIAL NO.: 10/054,207

FILED: January 22, 2002

FOR: Methods of Establishing Virtual Circuits and
of Providing a Virtual Private Network
Service Through a Shared Network, and
Provider Edge Device For Such

RESPONSE TO OFFICE ACTION DATED MAY 15, 2006

Honorable Director of Patents and Trademarks
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This response is being filed in view of the Examiner's Office Action of May 15, 2006. No claim amendments are being made since it is submitted that no claim amendments are required.

The Examiner has entered a new rejection of the claims of the application, this time with independent claim 20, and most of the remaining claims, being rejected under 35 U.S.C. §103 as being unpatentable over Jain U.S. Patent No. 6,765,914 in view of Bryden U.S. Patent No. 6,717,944. Reconsideration is requested.

Jain discloses a method for configuring subnets within a network architecture having a plurality of switches and a router coupled together by a shared bus (see preamble of claim 1). This configuration is said to be flexible because it is irrespective of device boundaries of the switches (col. 3, line 67 – col. 4, line 2). As an example, subnet 401 comprises hosts coupled to different switches (col. 4, lines 22-29 and Fig. 4).

To this end, Jain teaches to map each subnet with one respective VLAN designated by a VLAN ID (col. 4, lines 48-52). Then, the VLAN ID is stored in the egress list of each local

switch port coupled to a member host of the VLAN-defined subnet (col. 4, lines 54-58) and also of each bus connecting switch port of each switch coupled to a member host (col. 4, lines 59-61). Once such configuration steps have been achieved, packets can be routed between hosts within the network based on the VLAN ID and the destination MAC address they include (col. 5, line 31 – col. 6, line 27 and Fig. 7).

To put it briefly, Jain thus discloses a configuration method comprising defining one or more subnets each associated with one respective VLAN.

Claim 20 of the present application recites very different subject-matter, namely a method for providing a virtual private network (VPN) service through a shared network infrastructure, in which some of the CE interfaces are allocated to a VPN supporting a plurality of virtual local area networks (VLANs).

To achieve this, the method of claim 20 recites the establishment of at least one virtual circuit in the shared network infrastructure, in order to allow transmission between CE interfaces allocated to a given VPN and belonging to two PE devices corresponding to a common VLAN identifier.

In this way, a set of point-to-multipoint connections is automatically established in a given VPN, without the need of manual configuration to be carried out, as explained in the specification of the present application (see e.g. paragraph [0024]).

According to the office action, the applicants understand that the Examiner considers that the network architecture 100 of Jain would be a shared network infrastructure, the hosts would be CE devices, the switches 120, 130, 140 would PE devices, the subnets 401-403 would be respective VLANs within a single VPN (although the expression “VPN” is never used in Jain and rather the whole network architecture 100 is said to be preferably included in a chassis).

However, according to claim 20 of the present application, correspondence between each CE interface and a VLAN identifier is automatically learned from the VLAN identifier included in at least one tagged frame received from a CE device at each CE interface (step 1). Then, it is detected whether a pair of CE interfaces belonging to two PE devices corresponds to a

common VLAN identifier (step 2). Finally, in response to such detection, at least one virtual circuit is established in the shared network infrastructure between said two PE devices, for forwarding frames including said common VLAN identifier.

By contrast, as mentioned above, Jain discloses a configuration method for defining subnets within a network. For this configuration, one VLAN ID is specifically defined for use in each host-switch interface of a given subnet (col. 4, lines 48-52). This configuration is thus “manual”, i.e. it results from the choice of a VLAN ID for a respective subnet. Before this configuration step, no VLAN ID is included in any frame that may be received from a host. Consequently, no correspondence between each host-switch interface and a VLAN ID is automatically learned depending on a VLAN ID that would be received at a switch from a host.

Moreover, in the method of Jain, there is no need to detect whether a pair of host-switch interfaces belonging to two different switches would correspond to a common VLAN ID so as to establish a virtual circuit in the shared network infrastructure between two switches. On the contrary, as soon as the above-mentioned configuration step is completed, a packet sent by a sending host can be routed to a destination host based on the MAC address of the destination host. If the destination MAC address (and not the VLAN ID as mentioned by the Examiner) does not belong to a local switch port, the packet is forwarded to the switch’s bus connecting port, then to the bus and it is retrieved by all other switches before being accepted by the destined switch based on the destination MAC address (steps 710, 730, 735, 740 and 750).

Therefore, it is true, as noted by the Examiner, that the connection of a virtual circuit in the shared network infrastructure is not taught by Jain. But the establishment of a connection in the shared network infrastructure in response to the detection of whether a pair of CE interfaces belonging to two PE devices correspond to a common VLAN ID is not disclosed by Jain, either.

Due to these numerous differences (manual configuration rather than correspondence learning, absence of detection of whether a pair of interfaces belonging to two different switches would correspond to a common VLAN ID and absence of establishment of a

connection in the shared network infrastructure in response to such detection), Jain cannot be considered as a basis from which one skilled in the art could result in the subject-matter of claim 20 of the present application.

It is true that Bryden discloses a method for allocating virtual circuits in a communication network. However, Bryden does not disclose the other above-mentioned aspects that Jain fails to teach. Therefore, one skilled in the art would not be led to the subject-matter of claim 20 of the present application even when combining the teachings of Bryden with the teachings of Jain.

The subject-matter of Claim 20 is thus new and non-obvious in view of Jain even in view of Bryden. The same applies to Claim 49 for the same reasons. The other claims, 21-33 and 50-58, are allowable as well, in particular since they depend on Claim 20 or 49 directly or indirectly.

Since three office actions have already been issued for this case and overcome, it is respectfully requested that the application now be allowed.

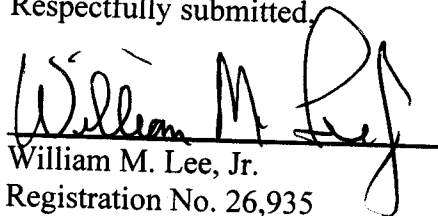
Concerning the comments relating to the supposedly broad language employed in the claims, applicants do not see why the claims should be given a narrower interpretation than the one usually adopted in the art. VPN, VLAN, PE/CE devices in particular refer to very well known elements in the art. Giving these terms a narrower interpretation would not only be inequitable, but it is submitted that such an interpretation would also be in contravention with the common knowledge in the art.

If the Examiner intends to maintain his position regarding breadth, he is respectfully requested to clearly state what exact term he considers as too broad and the reason why he does so, so that a proper refutation and or appropriate amendment can be made to overcome the rejection if necessary. However, as just noted, it is submitted that the claim terminology is both clear and not over-broad.

Given the above, it is submitted that this application is in condition for allowance, and the Examiner's further and favorable reconsideration in that regard is urged.

August 15, 2006

Respectfully submitted,

A handwritten signature in black ink, appearing to read "William M. Lee, Jr.", is written over a horizontal line.

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